

## ABSTRACT OF THE DISCLOSURE

A gradation patch image  $I_p$  used for determination of tone characteristics of an apparatus is progressively varied in the tone level thereof from the maximum tone level (level 255) to the minimum tone level (level 0). The gradation patch image is either a toner image continuously and consistently varied in the tone level thereof (Fig.3A) or a toner image having the tone levels varied stepwise at a smaller pitch than a width of a detection region of a patch sensor (Fig.3B). In density detection of such a gradation patch image  $I_p$ , toner image densities at portions on either sides in the detection region of the patch sensor are canceled each other out by averaging and hence, only a toner image density substantially at the center of the detection region can be obtained.

(Fig.3A)